



**APPENDIX E. QUALITY ASSURANCE/QUALITY CONTROL SUMMARY,
TECHNICAL BACKGROUND DOCUMENT: MERCURY WASTES,
EVALUATION OF TREATMENT OF BULK ELEMENTAL MERCURY,
FINAL REPORT**

FEBRUARY 8, 2002

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**EPA CONTRACT No. 68-W-98-025
WORK ASSIGNMENT No. 3-8
SAIC PROJECT No. 06-0758-08-1373-000**



QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

APPENDIX E. QUALITY ASSURANCE/ QUALITY CONTROL SUMMARY

Raw data from the analytical instrument is reported to the nearest one-hundredth of a $\mu\text{g/L}$ (i.e., 0.01), and the calibration standards vary from 0.50 to 40.00 $\mu\text{g/L}$. Therefore, to avoid extrapolation outside of the calibration range, the reported detection limit is 0.50 $\mu\text{g/L}$ and any sample that exceeds 40.00 $\mu\text{g/L}$ is diluted and rerun. Based on the calibration standards and instrument measurement, raw data will have as few as 2 and as many as 4 significant figures. Reported results are rounded to 3 significant figures, which will be dropped to 2 significant figures when the result is less than 1.00 $\mu\text{g/L}$. This convention is carried through when data are reported as mg/L , rather than $\mu\text{g/L}$. Several examples follow: 1) a raw data result of 3.45 $\mu\text{g/L}$ is associated with a dilution factor of 1,000 and the result may be reported as 3,450 $\mu\text{g/L}$ or 3.45 mg/L ; 2) a raw data result of 0.76 $\mu\text{g/L}$ is associated with a dilution factor of 1,000 and the result may be reported as 760 $\mu\text{g/L}$ or 0.76 mg/L ; and 3) a raw data result of 21.34 is associated with a dilution factor of 1,000 and the result may be reported as 21,300 $\mu\text{g/L}$ or 21.3 mg/L .

E.1 Laboratory QA/QC for EEI Work Order 01-01-549

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. Results of this review are provided in **Table E-1**.

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 $\mu\text{g/L}$. Measurement of these standards produced a linear trend with an acceptable correlation coefficient of 0.999817. The initial and continuing calibration standards are within the acceptable range (recovery was 101 % for the initial sample and 103 to 108 % for continuing samples), and the initial and continuing blanks are all below the reporting detection limit of 0.50 $\mu\text{g/L}$. A laboratory control standard was run prior to analyzing the samples, and the reported value of 11.00 $\mu\text{g/L}$ (110 % of the known value) is within acceptable limits.

The sample digestion log indicates the initial sample dilution factors, 0.2 g of solid per 20 mL of digestion reagent and 20 mL of TCLP leachate per 20 mL of digestion reagent. Additional notes in the laboratory QC report indicate the reagents in the initial dilution and how the samples achieved their final dilution factors of 1,000,000 for the solid samples and 100,000 for the TCLP leachate. The precision and accuracy summary provided for one of the digested solid samples (05A, 05A-duplicate, 05A-spike) and one of the TCLP leachates (01A, 01A-duplicate, 01A-spike) show acceptable precision (± 25 %) and accuracy results (75–125 %).





EVALUATION OF TREATMENT OF BULK ELEMENTAL MERCURY

Table E-1
Laboratory QC Data for Mercury—EEI Work Order 01-01-549

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
ICV	5.00	5.05	101	na	na	na
CCV1	5.00	5.15	103	na	na	na
CCV2	5.00	5.17	103	na	na	na
CCV3	5.00	5.29	106	na	na	na
CCV4	5.00	5.46	109	na	na	na
CCV5	5.00	5.42	108	na	na	na
LCS	10.00	11.00	110	na	na	na
ICB	unknown	0.05	na	na	na	<0.50
CCB1	unknown	-0.05	na	na	na	<0.50
CCB2	unknown	-0.09	na	na	na	<0.50
CCB3	unknown	-0.10	na	na	na	<0.50
CCB4	unknown	0.03	na	na	na	<0.50
CCB5	unknown	-0.01	na	na	na	<0.50
01A	na	1.71	na	6.65	100,000	171,000
01A-duplicate	na	1.60	na		100,000	160,000
01A-spike	5.00	5.31	106	na	na	na
05A	na	3.04	na	-18.0	1,000,000	(3,040,000)
05A-duplicate	na	3.64	na		1,000,000	(3,640,000)
05A-spike	5.00	5.32	106	na	na	na

E.2 Laboratory QA/QC for EEI Work Order 01-03-491

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. The raw data logs indicate that the total mercury and TCLP results were run in separate batches. Results of this review are provided in **Table E-2**.

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L for each of the runs. Measurement of these standards produced a linear trend with an acceptable correlation coefficient of 0.999720 for the TCLP run and 0.999733 for the total mercury run. The initial and continuing calibration standards are within the acceptable range for both runs, and the initial and continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported values are within acceptable limits.



QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

Table E-2
Laboratory QC Data for Mercury—EEI Work Order 01-03-491

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
TCLP Run						
ICV	5.00	4.94	98.8	na	na	na
CCV1	5.00	5.02	100	na	na	na
CCV2	5.00	4.98	99.6	na	na	na
CCV3	5.00	5.05	101	na	na	na
LCS	10.00	9.55	95.5	na	na	na
ICB	unknown	0.04	na	na	na	<0.50
CCB1	unknown	0.05	na	na	na	<0.50
CCB2	unknown	0.16	na	na	na	<0.50
CCB3	unknown	0.19	na	na	na	<0.50
01A	na	11.28	na	0.18	10,000	113,000
01A-duplicate	na	11.26	na		10,000	113,000
01A-spike	5.00	5.27	105	na	na	na
Total Mercury Run						
ICV	5.00	5.20	104	na	na	na
CCV1	5.00	5.06	101	na	na	na
CCV2	5.00	5.00	100	na	na	na
LCS	10.00	9.55	95.5	na	na	na
ICB	unknown	0.05	na	na	na	<0.50
CCB1	unknown	0.08	na	na	na	<0.50
CCB2	unknown	0.10	na	na	na	<0.50
05A	na	5.27	na	21.0	1,000,000	(5,270,000)
05A-duplicate	na	4.27	na		1,000,000	(4,270,000)
05A-triplicate	na	4.45	na	na	1,000,000	(4,450,000)
05A-spike	5.00	5.19	104	na	na	na

The sample digestion log indicates the initial sample dilution factors, 0.2 g of solid per 20 mL of digestion reagent and 20 mL of TCLP leachate per 20 mL of digestion reagent. Additional notes in the laboratory QC report indicate the reagents in the initial dilution and how the samples achieved their final dilution factors of 1,000,000 for the solid samples and 10,000 for the TCLP leachate. The precision and accuracy summary provided for one of the digested solid samples (05A, 05A-duplicate, 05A-spike) and one of the TCLP leachates (01A, 01A-duplicate, 01A-spike) show acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).





E.3 Laboratory QA/QC for EEI Work Order 01-05-904

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. Results of this review are provided in **Table E-3**.

Table E-3. Laboratory QC Data for Mercury—EEI Work Order 01-05-904

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
ICV	5.00	4.95	99.0	na	na	na
CCV1	5.00	4.85	97.0	na	na	na
CCV2	5.00	4.83	96.6	na	na	na
CCV3	5.00	4.87	97.4	na	na	na
LCS	10.00	10.42	104	na	na	na
ICB	unknown	0.06	na	na	na	<0.50
CCB1	unknown	0.03	na	na	na	<0.50
CCB2	unknown	0.03	na	na	na	<0.50
CCB3	unknown	0.08	na	na	na	<0.50
08A	na	6.60	na	1.65	1,000	6,600
08A-duplicate	na	6.71	na		1,000	6,710
08A-spike	10.00	9.82	98.2	na	na	na

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L. Measurement of these standards produced a linear trend with an acceptable correlation coefficient of 0.99995. The initial and continuing calibration standards are within the acceptable range (recovery was 99.0 % for the initial sample and 96.6 to 97.4 % for continuing samples), and the initial and continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported value of 10.42 µg/L (104 % of the known value) is within acceptable limits.

A sample digestion log identifies the reagents in the initial dilution and how the samples achieved their final dilution factors. The precision and accuracy summary provided for one of the digested solid samples (08A, 08A-duplicate, 08A-spike) shows acceptable precision (± 25 %) and accuracy results (75–125 %).

E.4 Laboratory QA/QC for EEI Work Order 01-07-213

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. The raw data logs indicate that the solids were run in a single batch and constant pH/TCLP results were run in two batches. Results of this review are provided in **Table E-4**.



QUALITY ASSURANCE/QUALITY CONTROL SUMMARY
Table E-4. Laboratory QC Data for Mercury—EEI Work Order 01-07-213

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
Solids						
ICV	5.00	4.99	99.8	na	na	na
CCV1	5.00	4.67	93.4	na	na	na
CCV2	5.00	4.94	98.8	na	na	na
CCV3	5.00	4.94	98.8	na	na	na
CCV4	5.00	4.88	97.6	na	na	na
LCS	(3,940)	34.51	85.0	na	97.1 L/kg	(3,350)
ICB	unknown	0.02	na	na	na	<0.50
CCB1	unknown	0.07	na	na	na	<0.50
CCB2	unknown	-0.14	na	na	na	<0.50
CCB3	unknown	-0.02	na	na	na	<0.50
CCB4	unknown	-0.10	na	na	na	<0.50
10A	na	9.07	na	8.25	913,000	(8,280,000)
10A-duplicate	na	9.85	na		917,000	(9,030,000)
10A-spike	10.00	11.94	119	na	na	na
Constant pH/TCLP leachates						
ICV	5.00	4.87	97.4	na	na	na
CCV1	5.00	4.70	94.0	na	na	na
CCV2	5.00	4.62	92.4	na	na	na
LCS	10.00	9.16	91.6	na	na	na
ICB	unknown	-0.02	na	na	na	<0.50
CCB1	unknown	0.03	na	na	na	<0.50
CCB2	unknown	0.05	na	na	na	<0.50
13A	na	9.70	na	2.85	100	970
13A-duplicate	na	9.98	na		100	998
13A-spike	10.00	9.36	93.6	na	na	na
Constant pH/TCLP leachates						
ICV	5.00	4.90	98.0	na	na	na
CCV1	5.00	4.92	98.4	na	na	na
CCV2	5.00	5.14	103	na	na	na
CCV3	5.00	5.45	109	na	na	na
LCS	10.00	9.49	94.9	na	na	na
ICB	unknown	0.03	na	na	na	<0.50
CCB1	unknown	0.06	na	na	na	<0.50
CCB2	unknown	0.08	na	na	na	<0.50
CCB3	unknown	0.16	na	na	na	<0.50
21A	na	5.93	na	4.66	10	59.3
21A-duplicate	na	5.66	na		10	56.6
21A-spike	40.00	21.30	107*	na	2	42.6

*Percent recovery calculated with the reported value and true value, due to the dilution factor.

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L for each of the runs. Measurement of these standards produced a linear trend with an





acceptable correlation coefficient of 0.999713 for the solid run and 0.999642 and 0.999632 for the constant pH/TCLP runs. The initial and continuing calibration standards are within the acceptable range for both runs, and the initial and continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported values are within acceptable limits.

The sample digestion log indicates the initial sample dilution factors, 0.2 g of solid per 20 mL of digestion reagent and 20 mL of TCLP leachate per 20 mL of digestion reagent. Additional notes in the laboratory QC report indicate the reagents in the initial dilution and how the samples achieved their final dilution factors for the solid and leachate samples. The precision and accuracy summary provided for one of the digested solid and leachate samples show acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).

E.5 Laboratory QA/QC for EEI Work Order 01-08-371

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. The raw data logs indicate that the solids were run in two batches and constant pH/TCLP results were run in two batches. Results of this review are provided in **Table E-5**.

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L for each of the runs. Measurement of these standards produced a linear trend with an acceptable correlation coefficient of 0.999848 and 0.999613 for the solid runs and 0.99983 and 0.999668 for the constant pH/TCLP runs. The initial and continuing calibration standards are within the acceptable range for both runs, and the initial and continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported values are within acceptable limits.

The sample digestion log indicates the reagents used in the initial dilution and how the samples achieved their final dilution factors for the solid and leachate samples. The precision and accuracy summary provided for one of the digested solid and leachate samples show acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).



QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

Table E-5
Laboratory QC Data for Mercury—EEI Work Order 01-08-371

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
Constant pH/TCLP leachates						
ICV	5.00	5.05	101	na	na	na
CCV1	5.00	5.22	104	na	na	na
CCV2	5.00	5.35	107	na	na	na
CCV3	5.00	5.05	101	na	na	na
LCS	10.00	10.12	101	na	na	na
ICB	unknown	0.07	na	na	na	<0.50
CCB1	unknown	0.10	na	na	na	<0.50
CCB2	unknown	0.20	na	na	na	<0.50
CCB3	unknown	0.06	na	na	na	<0.50
01A	na	12.79	na	0.86	1	12.8
01A-duplicate	na	12.90	na		1	12.9
01A-spike	5.00	4.20	84.0	na	na	na
Constant pH/TCLP leachates						
ICV	5.00	4.86	97.2	na	na	na
CCV1	5.00	5.08	102	na	na	na
CCV2	5.00	5.05	101	na	na	na
CCV3	5.00	4.91	98.2	na	na	na
LCS	10.00	10.14	101	na	na	na
ICB	unknown	0.04	na	na	na	<0.50
CCB1	unknown	0.09	na	na	na	<0.50
CCB2	unknown	0.04	na	na	na	<0.50
CCB3	unknown	0.04	na	na	na	<0.50
29A	na	2.34	na	11.8	1,000,000	2,340,000
29A-duplicate	na	2.08	na		1,000,000	2,080,000
29A-spike	10.00	10.01	100	na	na	na





EVALUATION OF TREATMENT OF BULK ELEMENTAL MERCURY

Table E-5.
Laboratory QC Data for Mercury—EEI Work Order 01-08-371 (Continued)

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
Solids						
ICV	5.00	5.25	105	na	na	na
CCV1	5.00	5.39	108	na	na	na
CCV2	5.00	4.91	98.2	na	na	na
CCV3	5.00	4.91	98.2	na	na	na
CCV4	5.00	4.74	94.8	na	na	na
LCS	(3,940)	36.99	93.9	na	100 L/kg	(3,700)
ICB	unknown	0.03	na	na	na	<0.50
CCB1	unknown	-0.01	na	na	na	<0.50
CCB2	unknown	0.01	na	na	na	<0.50
CCB3	unknown	0.04	na	na	na	<0.50
CCB4	unknown	0.05	na	na	na	<0.50
18A	na	3.83	na	10.6	500,000	(1,920,000)
18A-duplicate	na	4.26	na		500,000	(2,130,000)
18A-spike	10.00	9.69	96.9	na	na	na
Solids						
ICV	5.00	5.06	101	na	na	na
CCV1	5.00	4.93	98.6	na	na	na
CCV2	5.00	4.89	97.8	na	na	na
LCS	(3,940)	3.54	89.8	na	1,000 L/kg	(3,540)
ICB	unknown	0.05	na	na	na	<0.50
CCB1	unknown	-0.08	na	na	na	<0.50
CCB2	unknown	-0.09	na	na	na	<0.50
24A	na	2.09	na	6.93	1,000,000	(2,090,000)
24A-duplicate	na	2.24	na		1,000,000	(2,240,000)
24A-spike	10.00	9.69	96.9	na	na	na



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E.6 Laboratory QA/QC for EEI Work Order 01-09-416

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. The raw data logs indicate that the samples were run in three batches; two batches of constant pH and TCLP leachates and one batch of solid samples. Results of this review are provided in **Table E-6**.

Table E-6
Laboratory QC Data for Mercury—EEI Work Order 01-09-416

Sample ID	True mg/L (mg kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg /kg)
Constant pH/TCLP leachates						
ICV	5.00	5.05	101	na	na	na
CCV1	5.00	5.22	104	na	na	na
CCV2	5.00	5.28	106	na	na	na
CCV3	5.00	5.29	106	na	na	na
CCV4	5.00	5.20	104	na	na	na
CCV5	5.00	5.26	105	na	na	na
CCV6	5.00	5.27	105	na	na	na
LCS1	10.00	10.65	107	na	na	na
LCS2	10.00	10.31	103	na	na	na
ICB	unknown	0.03	na	na	na	<0.50
CCB1	unknown	0.00	na	na	na	<0.50
CCB2	unknown	-0.01	na	na	na	<0.50
CCB3	unknown	0.04	na	na	na	<0.50
CCB4	unknown	0.08	na	na	na	<0.50
CCB5	unknown	0.18	na	na	na	<0.50
CCB6	unknown	0.13	na	na	na	<0.50
15A	na	6.01	na	2.36	10	60.1
15A-duplicate	na	5.87	na		10	58.7
15A-spike	40.00	20.45	102 ^a	na	2	40.9
18A	na	10.79	na	2.29	1	10.8
18A-duplicate	na	11.04	na		1	11.0
18A-spike	5.00	4.87	97.4	na	na	na





EVALUATION OF TREATMENT OF BULK ELEMENTAL MERCURY

Table E-6
Laboratory QC Data for Mercury—EEI Work Order 01-09-416 (Continued)

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
Constant pH/TCLP leachates						
ICV	5.00	4.95	99.0	na	na	na
CCV1	5.00	4.89	97.8	na	na	na
CCV2	5.00	4.89	97.8	na	na	na
CCV3	5.00	4.70	94.0	na	na	na
LCS	10.00	11.15	112	na	na	na
ICB	unknown	-0.02	na	na	na	<0.50
CCB1	unknown	0.00	na	na	na	<0.50
CCB2	unknown	0.00	na	na	na	<0.50
CCB3	unknown	0.06	na	na	na	<0.50
29A	na	19.19	na	0.675	10	192
29A-duplicate	na	19.32	na		10	193
29A-spike	10.00	10.01	100	na	na	na
Solids						
ICV	5.00	5.24	105	na	na	na
CCV1	5.00	5.16	103	na	na	na
CCV2	5.00	5.22	104	na	na	na
LCS	(3,940)	38.02	96.4	na	100 L/kg	(3,800)
ICB	unknown	0.05	na	na	na	<0.50
CCB1	unknown	-0.02	na	na	na	<0.50
CCB2	unknown	-0.02	na	na	na	<0.50
41A	na	1.38	na	2.86	1,000,000	(1,380,000)
14A-duplicate	na	1.42	na		1,000,000	(1,420,000)
41A-spike	40.00	20.16	101*	na	2	40.3

*Percent recovery calculated with the reported value and true value, due to the dilution factor.

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L for each of the three batch runs. Measurement of these standards produced a linear trend with acceptable correlation coefficients of 0.999997, 0.999632, and 0.999639. The initial and continuing calibration standards are within the acceptable range for both runs, and the initial and



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continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported values are within acceptable limits.

The sample digestion log indicates the reagents used in the initial dilution and how the samples achieved their final dilution factors for the solid and leachate samples. The precision and accuracy summary provided for the leachate samples show acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).

E.7 Laboratory QA/QC for EEI Work Order 01-10-360

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. Results of this review are provided in **Table E-7**.

Table E-7
Laboratory QC Data for Mercury—EEI Work Order 01-10-360

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
ICV	5.00	5.19	104	na	na	na
CCV1	5.00	4.88	97.6	na	na	na
CCV2	5.00	5.01	100	na	na	na
CCV3	5.00	4.98	99.6	na	na	na
LCS1	10.00	10.57	106	na	na	na
LCS2	10.00	10.18	102	na	na	na
ICB	unknown	0.09	na	na	na	<0.50
CCB1	unknown	0.04	na	na	na	<0.50
CCB2	unknown	0.20	na	na	na	<0.50
CCB3	unknown	0.16	na	na	na	<0.50
01A	na	4.26	na	5.69	1,000	4,260
01A-duplicate	na	4.51	na		1,000	4,510
01A-spike	10.00	10.01	100	na	na	na
16A	na	8.90	na	12.7	1	8.90
16A-duplicate	na	10.11	na		1	10.1
16A-spike	5.00	5.45	109	na	na	na

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L. Measurement of these standards produced a linear trend with an acceptable correlation coefficient of 0.999705. The initial and continuing calibration standards are within the





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acceptable range, and the initial and continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported value is within acceptable limits.

A sample digestion log identifies the reagents in the initial dilution and how the samples achieved their final dilution factors. The precision and accuracy summary provided for one of the digested solid samples shows acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).

E.8 Laboratory QA/QC for EEI Work Order 01-10-674

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. The raw data logs indicate that the samples were run in three batches; two batches of constant pH and TCLP leachates and one batch of solid samples. Results of this review are provided in **Table E-8**.

Table E-8
Laboratory QC Data for Mercury—EEI Work Order 01-10-674

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
Constant pH leachates						
ICV	5.00	4.80	96.0	na	na	na
CCV1	5.00	4.65	93.0	na	na	na
CCV2	5.00	4.66	93.2	na	na	na
LCS	10.00	8.95	89.5	na	na	na
ICB	unknown	0.02	na	na	na	<0.50
CCB1	unknown	0.06	na	na	na	<0.50
CCB2	unknown	0.06	na	na	na	<0.50
16A	na	1.84	na	5.01	1	1.84
16A-duplicate	na	1.75	na		1	1.75
16A-spike	5.00	4.92	98.5	na	na	na



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Table E-8
Laboratory QC Data for Mercury—EEI Work Order 01-10-674 (Continued)

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
Constant pH/TCLP leachates						
ICV	5.00	5.14	103	na	na	na
CCV1	5.00	4.94	98.8	na	na	na
CCV2	5.00	4.97	99.4	na	na	na
CCV3	5.00	4.96	99.2	na	na	na
LCS	10.00	10.52	105	na	na	na
ICB	unknown	0.06	na	na	na	<0.50
CCB1	unknown	0.06	na	na	na	<0.50
CCB2	unknown	0.13	na	na	na	<0.50
CCB3	unknown	0.13	na	na	na	<0.50
31A	na	1.88	na	1.86	1	1.88
31A-duplicate	na	1.84	na		1	1.84
31A-spike	5.00	4.33	86.6	na	na	na
Solids						
ICV	5.00	4.99	99.8	na	na	na
CCV1	5.00	4.99	99.8	na	na	na
CCV2	5.00	4.92	98.4	na	na	na
CCV3	5.00	4.98	99.6	na	na	na
CCV4	5.00	4.95	99.0	na	na	na
LCS	(3,940)	35.19	89.3	na	100 L/kg	(3,520)
ICB	unknown	0.05	na	na	na	<0.50
CCB1	unknown	0.03	na	na	na	<0.50
CCB2	unknown	0.10	na	na	na	<0.50
CCB3	unknown	0.23	na	na	na	<0.50
CCB4	unknown	0.09	na	na	na	<0.50
39A	na	4.36	na	18.1	100,000	(436,000)
39A-duplicate	na	5.23	na		100,000	(523,000)
39A-spike	40.00	20.78	103*	na	2	41.6

*Percent recovery calculated with the reported value and true value, due to the dilution factor.





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A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L for each of the three batch runs. Measurement of these standards produced a linear trend with acceptable correlation coefficients of 0.999791, 0.999858, and 0.999852. The initial and continuing calibration standards are within the acceptable range for both runs, and the initial and continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported values are within acceptable limits.

The sample digestion log indicates the reagents used in the initial dilution and how the samples achieved their final dilution factors for the leachate samples. The precision and accuracy summary provided for the leachate samples show acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).

E.9 Laboratory QA/QC for EEI Work Order 01-10-676

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. Results of this review are provided in **Table E-9**.

Table E-9
Laboratory QC Data for Mercury—EEI Work Order 01-10-676

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
ICV	5.00	5.07	101	na	na	na
CCV1	5.00	5.01	100	na	na	na
CCV2	5.00	4.95	99.0	na	na	na
LCS	10.00	10.18	102	na	na	na
ICB	unknown	0.04	na	na	na	<0.50
CCB1	unknown	-0.01	na	na	na	<0.50
CCB2	unknown	-0.02	na	na	na	<0.50
02A	na	7.98	na	3.21	100	798
02A-duplicate	na	8.24	na		100	824
02A-spike	10.00	10.01	100	na	na	na

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L. Measurement of these standards produced a linear trend with an acceptable correlation coefficient of 0.999858. The initial and continuing calibration standards are within the



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acceptable range, and the initial and continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported value is within acceptable limits.

A sample digestion log identifies the reagents in the initial dilution and how the samples achieved their final dilution factors. The precision and accuracy summary provided for one of the digested solid samples shows acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).

E.10 Laboratory QA/QC for EEI Work Order 01-12-039

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. The raw data logs indicate that the samples were run in two batches; one batch of constant pH and TCLP leachates and one batch of solid samples. Results of this review are provided in **Table E-10**.

A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 µg/L for each of the two batch runs. Measurement of these standards produced a linear trend with acceptable correlation coefficients of 0.999817 and 0.999755. The initial and continuing calibration standards are within the acceptable range for both runs, and the initial and continuing blanks are all below the reporting detection limit of 0.50 µg/L. A laboratory control standard was run prior to analyzing the samples, and the reported values are within acceptable limits.

The sample digestion log indicates the reagents used in the initial dilution and how the samples achieved their final dilution factors for the leachate samples. The precision and accuracy summary provided for the leachate samples show acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).

E.11 Laboratory QA/QC for EEI Work Order 01-12-515

To assess the control of laboratory QA/QC, a review was made of the instrument calibration curve, initial and continuing calibration samples (ICV and ICCV), initial and continuing blank samples (ICB and ICCB), laboratory control sample (LCS), raw data sheets, sample digestion log, dilution factors, and precision and accuracy summary sheets. The raw data logs indicate that the samples were run in two batches; one batch of constant pH and TCLP leachates and one batch of solid samples. Results of this review are provided in **Table E-11**.





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Table E-10. Laboratory QC Data for Mercury—EEI Work Order 01-12-039

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
Constant pH/TCLP leachates						
ICV	5.00	4.85	97.0	na	na	na
CCV1	5.00	4.93	98.6	na	na	na
CCV2	5.00	4.96	99.2	na	na	na
CCV3	5.00	4.88	97.6	na	na	na
CCV4	5.00	4.95	99.0	na	na	na
LCS	10.00	10.52	105	na	na	na
ICB	unknown	0.01	na	na	na	<0.50
CCB1	unknown	0.00	na	na	na	<0.50
CCB2	unknown	0.01	na	na	na	<0.50
CCB3	unknown	-0.01	na	na	na	<0.50
CCB4	unknown	-0.01	na	na	na	<0.50
04A	na	2.01	na	16.1	1	2.01
0 4 A - duplicate	na	1.71	na		1	1.71
04A-spike	5.00	5.42	108	na	na	na
Solids						
ICV	5.00	5.00	100	na	na	na
CCV1	5.00	5.15	103	na	na	na
CCV2	5.00	5.20	104	na	na	na
CCV3	5.00	5.19	104	na	na	na
LCS	(3,940)	4.21	107	na	1,000 L/kg	(4,210)
ICB	unknown	0.07	na	na	na	<0.50
CCB1	unknown	0.10	na	na	na	<0.50
CCB2	unknown	0.07	na	na	na	<0.50
CCB3	unknown	0.08	na	na	na	<0.50
29A	na	4.45	na	4.35	1,000,000	(4,450,000)
2 9 A - duplicate	na	4.25	na		1,000,000	(4,250,000)
29A-spike	40.00	21.23	106*	na	2	42.46

*Percent recovery calculated with the reported value and true value, due to the dilution factor.



QUALITY ASSURANCE/QUALITY CONTROL SUMMARY
Table E-11. Laboratory QC Data for Mercury—EEI Work Order 01-12-515

Sample ID	True mg/L (mg/kg)	Found mg/L	Percent Recovery	RPD %	Dilution Factor	Reported Result mg/L (mg/kg)
Constant pH/TCLP leachates						
ICV	5.00	4.89	97.8	na	na	na
CCV1	5.00	4.85	97.0	na	na	na
CCV2	5.00	4.71	94.2	na	na	na
CCV3	5.00	4.81	96.2	na	na	na
LCS	10.00	9.89	98.9	na	na	na
ICB	unknown	0.06	na	na	na	<0.50
CCB1	unknown	0.02	na	na	na	<0.50
CCB2	unknown	-0.01	na	na	na	<0.50
CCB3	unknown	0.02	na	na	na	<0.50
01A	na	1.90	na	1.56	1,000	1,900
01A-duplicate	na	1.93	na		1,000	1,930
01A-spike	40.00	21.29	108*	na	2	42.6
30A	na	1.50	na	0.00	100	150
30A-duplicate	na	1.50	na		100	150
30A-spike	40.00	20.15	101*	na	2	40.3
Solids						
ICV	5.00	5.22	104	na	na	na
CCV1	5.00	5.09	102	na	na	na
CCV2	5.00	5.19	104	na	na	na
CCV3	5.00	4.93	98.6	na	na	na
LCS	(3,940)	37.51	95.2	na	100 L/kg	(3,750)
ICB	unknown	0.01	na	na	na	<0.50
CCB1	unknown	0.07	na	na	na	<0.50
CCB2	unknown	0.09	na	na	na	<0.50
CCB3	unknown	0.08	na	na	na	<0.50
19A	na	35.44	na	2.66	100,000	(3,540,000)
19A-duplicate	na	34.51	na		100,000	(3,450,000)
19A-spike	40.00	37.12	92.8	na	na	na

* Percent recovery calculated with the reported value and true value, due to the dilution factor.





A five-point calibration curve was constructed with standard mercury concentrations of 0.50 to 40.00 $\mu\text{g/L}$ for each of the two batch runs. Measurement of these standards produced a linear trend with acceptable correlation coefficients of 0.999547 and 0.999759. The initial and continuing calibration standards are within the acceptable range for both runs, and the initial and continuing blanks are all below the reporting detection limit of 0.50 $\mu\text{g/L}$. A laboratory control standard was run prior to analyzing the samples, and the reported values are within acceptable limits.

The sample digestion log indicates the reagents used in the initial dilution and how the samples achieved their final dilution factors for the leachate samples. The precision and accuracy summary provided for the leachate samples show acceptable precision ($\pm 25\%$) and accuracy results (75–125 %).

